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ABSTRACT

The Developing Mindful Learners Model (DMLM), developed within the framework of Howard Gardner's multiple intelligences theory, connects three factors--content, framework, and world vision--for the purpose of helping underachieving students to become more "mindful": i.e., to become one who welcomes new ideas, considers more than one perspective, and holds a process view of life. At the heart of the model is Ellen Langer's theory of mindfulness. This Developing Mindful Learners Model is used in a pilot application on a target population of 29 African American and 1 Hispanic American third and fourth graders, most of whom are performing below grade level. Data collection is aimed at examining discernible growth for each child, focusing on: Stanford Achievement tests, N.W. Regional assessments, student works represented in both "processfolios" and portfolios, student performances in an Earth Day program, and student publication of a literary magazine. (Contains a bibliography of approximately 100 items.) (EAJ)

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So long as there shall exist, by reason of law and custom, a social condemnation, which in the face of civilisation, artificially creates hell on earth, and complicates a destiny that is devine, with human fatality; so long as the three problems of the age--the degradation of man by poverty, the ruin of woman by starvation, and the dwarfing of childhood by physical and spiritual night--are not yet solved; as long as in certain regions, social asphyxia shall be possible; in other words, and from a yet more extended point of view, so long as ignorance and misery remain on earth, books like this cannot be useless.

Victor-Marie Hugo
preface to *Les Miserables*

Developing Mindful Learners Model

a 21st century ecological approach

Project Description

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Abstract

This project description introduces the Developing Mindful Learners Model (DMLM).

Inspired by Ellen Langer's mindfulness theory, the model connects three factors: content, framework, and world vision for the purpose of helping underachieving students to become more mindful; i.e. one who welcomes new ideas, creates new categories, considers more than one perspective, holds a process view of life, and reframes context. Content consists of the new standards for Philadelphia public schools. Framework inculdes Howard Gardner's multiple intelligences theory. World vision connects James Redfield, Fritjof Capra, and Ellen Langer.

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Wanderer, the road is your
footsteps, nothing else;
wanderer, there is no pain,
you lay down a path in
walking.
In walking you lay down a
path

and when turning around
you see the road you'll
never step on again.
Wanderer, path there is none,
only tracks on ocean foam.

Antonio Machado
(translated from Spanish by Francisco Varela)

Introduction

Twenty-nine African American children and one Hispanic American child enrolled in a 3rd and 4th grade split, 1995-1996, make up the target population for the pilot application of the Developing Mindful Learners Model (DMLM) at the Joseph Pennell elementary school in Philadelphia, Pennsylvania. The split consists of twenty-two fourth graders and eight third graders.

25 of the 30 children in this class have been defined as reading below level in the literature based, Houghton Mifflin program. Four fourth graders are at a 4-2 level, a half grade above. Eighteen fourth graders read below level, ranging from 3-1 to 2-1. One third grader is on level (3-1). Seven of the eight 3rd graders are reading below level. In sum, while five children read at or above level, 25 read below level.

None of the children operated at the level of higher order, verbal linguistic intelligence or higher order, logical mathematical intelligence when the year began. That meant they did not engage creative/expressive writing, story telling/inventing, poetry appreciation/writing, debate/formal speaking, and meta linguistics--features of higher order, verbal linguistic intelligence. Nor did they engage finding unknowns, use of deductive and inductive reasoning, logic, metacognition, and linking operations to solve complex problems--features of higher order, logical mathematical intelligence.

These are the ways David Lazear described the higher ends of both of Gardner's intelligences--higher order, verbal linguistic intelligence and higher order, logical mathematical intelligence, respectively.

Most of the children have mathematical backgrounds that have not prepared them for the NCTM standard. That is to say they have not mastered basic number facts of addition, subtraction, multiplication or division. Their understanding of place value is limited. Moreso, their experience with real life data collection, problem solving and critical thinking in mathematics is inadequate relative to the standard.

Also, many children in this group have underdeveloped scientific knowledge. Few have competed in regional science fairs or thought about science fiction. In general, they would not live up to the standard described in 2061's benchmarks for science.

Most of the children in this group never faced the expectations inherent in the National Standards Project suggestions for Reading and Writing. Yet every one of them could meet a standard such as " Read 25 books " if given the resources and support.

Few of these children have ever had an opportunity to develop what Bill Singer once called a " future focused role image." They do not have clear images of what careers they might follow as adults; thus, their images of the future do not help them connect with present subjects studied. Nor have they thought about major, 21st century world problems such as saving endangered species and ecosystems, human overpopulation, ozone layer effects, acid rain, and greenhouse effects. In short, their vision of tomorrow seems shortsighted.

Additionally, few of these children have been used to systematic instruction in David Perkins' knowledge as design method for metacognition across content areas. Few come from writing intensive classrooms, i.e. writing to learn as well as writing for readers. Few have been involved in poetry and performance classes. Few have faced activities such as open mike presentations, dramatic readings, television story boards, venn diagrams, bubble dialogs, knowledge as design story maps, and think-pair-share cooperative learning. More specifically, not one child in the target population has been in a class that used Gardner's multiple intelligences theory as an instructional framework to build a community of learners. That means not one child has had oppotunities to engage the five themes of higher order, verbal linguistic intelligence within the context of multiple intelligences theory.

Yet, as Denny Taylor, an award winning ethnographic researcher in the literacy field. points out, each of these children comes to the classroom with literacies that can be used as stepping stones to acquire additional literacies in Language, Mathematics and Science. Also, Vygotsky, Dewey, Paul, Bruner, Gardner, and the whole constructivism movement all seem to agree that each child's present understanding is lower than his or her potential understanding. Moreso, the consensus seems to be that skilled teaching can get a child closer to that potential understanding.

Even more importantly, as Bruner writes in *The culture of education* the creation of communities of learners may be the way beyond the antinomies that most educational systems in the United States of America have struggled with since " A nation at risk " in 1983.

Says Bruner " We have three antinomies, then: the individual-realization versus the culture-preserving antinomy; the talent-centered versus the tool--centered antinomy; and the particularism versus universalism antinomy. Without keeping them in mind, we risk losing our way in evaluating what we have learned about early schooling and where we are moving. For they help keep issues in balance."

In this compelling essay about the complexity of late 20th century, educational aims, Brunner describes how the struggles among these three model case sets of opposite ideas that are both true (the antinomies), have mired once promising programs such as Head Start and characterized many educational reform efforts in the United States of America. Then he reframes the situation.

" But what we have learned about learning in all this discouraging morass is anything but trivial: Even under the least favorable conditions--psychologically, fiscally, educationally--we still succeed in giving some children a sense of their own possibilities. We do it by getting them (and sometimes their parents) to collaborate in an enabling community."

The good news is that Howard Gardner's multiple intelligences theory provides a framework for creating an enabling community of learners in which each child might reach full potential regardless of home life and background.

First, Gardner defines intelligence as the " capacity to solve problems and fashion intellectual products." This contrasts the traditional operational definition of intelligence as an IQ score. It frees teachers from the belief that instruction can not improve intelligence.

Second, he asserts that each normal person has a spectrum of seven intelligences: verbal linguistic, logical mathematical, musical, visual spatial, bodily kinesthetic, interpersonal, and intrapersonal. This contrasts the traditional view of single score intelligence and allows teachers to view each child as having a set of seven intelligences, some relatively strong, some relatively weak, each capable of growth.

Third, he says each of these seven intelligences can be improved through teaching, coaching and experience. This contrasts the notion that intelligence is fixed, changing little from birth to death.

One huge implication of this set of ideas is the following: <u>children already have a spectrum of intelligences, each of which can be made better through effective teaching.</u> An enabling community that values the spectrum of intelligences of each of its members (including the teacher) might succeed in giving learners a sense of their own possibilities.

Finally, because DMLM combines strategic content, framework and world vision, all the members of the enabling community it creates might become more mindful than they were. **Or as Howard Gardner teaches us about intelligence, all the members should be better able to solve problems and fashion intellectual products that meet a standard of excellence.**

" Education is no substitute for intelligence. That elusive quality is defined only in part by puzzle-solving ability. It is in the creation of new puzzles reflecting what your senses report that you round out the definition."

Frank Herbert
Chapterhouse Dune

Teacher Inquiry

DMLM uses Gardner's multiple intelligences theory to connect key variables of schooling such as subject matter, methods, teaching, learning, assessing and standards. That is the instructional framework. That solves a puzzle. But it is teacher inquiry that permits stepping back to describe what is happening within the flow of teaching and learning. It is teacher inquiry that permits the creation of new puzzles.

Motivation for the inquiry in DMLM stems from both a need to describe ways children might construct higher order, verbal linguistic intelligence and higher order, logical mathematical intelligence--two topics missing in the data base for Gardner's multiple intelligences. The children's story needs telling, on the one hand. The missing topics in four data bases needs examining, on the other hand. No one at Joseph Pennell elementary has ever described how children might construct higher order intelligences and of the four dozen works cited in Dissertation Abstracts, Psy lit, ERIC, and First Search (internet) data bases, no one has examined higher order, intelligences within the context of a fourth grade multiple intelligences classroom. In particular, no one has examined how Gardner's multiple intelligences theory might be used to implement the new standards in a fourth grade class.

These streams of thought, then, inform the inquiry part of the model. The problem DMLM addresses is absent in the data bases and present in the perceived need to tell the story of how underachieving children might achieve.

My inquiry creates a new puzzle: **Does use of Howard Gardner's multiple intelligences theory to implement the new standards in a fourth grade class yield discernible growth for each child?**

Several key ideas need unpacking in this question.

First, Gardner's multiple intelligences theory proposes seven ways of being smart. The seven intelligences themselves provide a means to connect subject matter, methods, teaching, learning, assessing, and standards.

Second, new standards for Science, Mathematics, Language Arts, The Arts, and cross cutting competencies have been presented in draft form to all stakeholders in the Philadelphia Public schools. The draft is to be revised, then implimented in 1997-1998.

Third, " discernible growth " means a pattern of increased quality on performance assessments of intellectual products according to an explicit standard for judging. The National Intellectual Standard from the National Council for Excellence in Critical Thinking is one such explicit guide for judging work along the lines of clarity, relevance, accuracy, precision, logic, depth and breadth.

Finally, at the heart of multiple intelligences is Garnder's definition. He says intelligence **" entails the capacity to solve problems or fashion intellectual products of value in a cultural setting."**

" Simple in means.
Rich in ends."
Arne Naess

Data Collection

The first year running of the DMLM project (1996-1997) with a regular 4th grade class will take into account the new standards for Superintendent Hornbeck's Children Achieving plan. Thus the data collection will focus on the Stanford Achievement test, NW regional assessments, student works represented in both processfolios and portfolios, student performances in an Earth Day program, and student publication of Memoirs and Visions, a literary magazine.

Thus, the data collection aims at examining discernible growth for each child.

In summary, data is collected within the flow of the instructional plan (see appendix), i.e. the relationships among subject matter, method, teaching, learning, assessing, and standards, using multiple intelligences as the primary instructional framework. That means the data derives from what Bruner calls instruction in narrative and scientific thinking--the stuff of most content in school.

table one: Data collection for DMLM

teacher inquiry	data collection
Does use of Howard Gardner's multiple intelligences theory to implement the new standards yield discernible growth for each child?	•Stanford Achievement test for 4th grade •NW regional assessments at Pennell elementary •processfolios of sample works •portfolios of best works •Earth Day program •Memoirs and Visions literary magazine

In addition to the above data collection for a year long teacher inquiry, I will pursue a second, more short term inquiry for a Spencer Foundation grant in teacher research at the University of Pennsylvania. For this study the following inquiry holds center stage: **What gender issues emerge from systematic exploration of selected works from Steven Cosgrove's multicultural novels for children?**

The data collection method for this inquiry will be teacher journals of student responses. Any intellectual products generated by this gender project will be published as part of the work for the Spencer Foundation grant.

" ' We all are souls in growth; we all have an original intention that is positive; and we can all remember. Our responsibility is to hold that idea for everyone we meet. That's the true Interpersonal Ethic; that's how we uplift, that's the contagion of the new awareness that is encircling the planet. We either fear that human culture is falling apart, or we can *hold the Vision* that we are *Awakening*. Either way, our expectation is a prayer that goes out as a force that tends to bring about the end we envision. Each of us must consciously choose between these two futures.' "

The Tenth Insight
Holding the Vision

James Redfield

World Vision

The historical context for constructing the Developing Mindful Learners Model is, of course, the present transdisciplinary, global transformation from an old paradigm to a new one--a decidedly non Newtonian world view, a vision that a critical mass of higher selves are creating a more spiritual planet.

James Redfield, author of *The Celestine Prophecy,* calls this the world vision. Deep ecologists such as Arne Naess and visionaries such as Barbara Marx Hubbard might agree.

Frijof Capra et al refer to the new perspective as the *ecological paradigm.* It is within the context of the ecological paradigm, i.e. an emerging folk psychology rooted in 20th century constructivism, that DMLM exists. The paradigm enables a thinker to see relationships among systems. Ecologically, the sea, air and land cannot be separated. Nor can the knower, known and process of knowing. Likewise, the key factors of DMLM live in relationship to the whole--the charge of helping underachieving children to engage the five themes of higher order, verbal linguistic intelligence in both narrative and scientific thinking vis a vis the Philadelphia Standard for Hornbeck's Children Achieving plan.

Capra's ecological paradigm itself has five criteria. These distinguish it from the old world view and, in turn, guides the construction of DMLM.

According to Capra, the old scientific paradigm may be called Cartesian, Newtonian, or Baconian, since its main characteristics were formulated by Descartes, Newton, and Bacon." In contrast, " the new paradigm may be called holistic, ecological, or systemic, but none of these adjectives characterizes it completely."

Then he offers five criteria of new paradigm thinking in science:

- **shift from part to the whole**
- **shift from structure to process**
- **shift from objective science to " epistemic science "**
- **shift from building to network as a metaphor of knowledge**
- **shift from truth to approximate descriptions**

Spelled out, these criteria are as follows:

- **" The properties of the parts can be understood only from the dynamics of the whole. Ultimately, there are no parts at all. What we call a part is merely a pattern in an inseparable web of relationships."**
- **" In the new paradigm every structure is seen as the manifestation of an underlying process. The entire web of relationships is intrinsically dynamic."**
- **"...epistemology--the understanding of the process of knowledge-- is to be included explicitly in the description of natural phenomena."**
- **The metaphor of building " is being replaced by that of the network. As we perceive reality as a network of relationships, our descriptions, too, form an interconnected network representing the observed phenomena."**
- **" In the new paradigm, it is recognized that all concepts, theories, and findings are limited and approximate."**

These criteria match another set of critera for a paradigm shift in spirituality.

All five of Capra's criteria for the ecological paradigm affect the design of DMLM. For example, model weaves a network of relationships among its factors (content, framework, world vision). These networks are relational--each defines the other, all are defined by the whole (namely DMLM) and, in turn, define the whole. The model is a manifestation of the unified field or, as David Bohm says, the implicate order. Through teacher inquiry, it includes the process of knowledge and yields approximate descriptions rather than "truth."

Additionally, the model embodies Capra's idea that solutions to complex problems be both systems level and beneficial in the long term. Capra's ecological paradigm meets those criteria. The ecological paradigm is a solution to the complex problem of defining a new world view in an age on the crest of a new millennium, and it will affect future generations.

Likewise, DMLM aims to solve the complex problem of helping defined underachievers to grow intelligences. Its implications may benefit future generations and other populations of children as well.

Most importantly, DMLM encourages me to create an enabling community of learners rooted in spirituality, and it facilitates each learner's creation of a new possibility--what Joseph Chilton Pearce once called a crack in the cosmic egg.

> **Our *cosmic egg* is the sum total of our notions of what the world is, notions which define what reality *can be* for us. The crack, then, is a mode of thinking through which imagination can escape the mundane shell and create a new cosmic egg. The crack is that " twilight between the worlds " found by the young anthropologist, Carlos Castaneda, in his study of the Yaqui Indian sorcerer, don Juan, and his " Way of Knowledge." The crack is found as well in that " narrow gate " of Jesus' Way of Truth. The crack is an open end, going beyond the broad, statistical way of the world.**

The model itself was a crack in the cosmic egg born 23 January 1996 at a Philadelphia Writing Project, teacher research seminar, University of Pennsylvania, Shirley Brown and Diane Waff, facilitators. Then, on 20 March 1996, it was baptized in an doctoral seminar on learning theories at Temple University, Helmut Bartel, Professor.

table two: Three Key Factors of DMLM

Content	Framework	World Vision
new standards: •Science •Mathematics •Language Arts •The Arts •cross cutting competencies	•multiple intelligences theory (Gardner) •teacher inquiry (Lytle, Cochran-Smith) •constructivism (Bruner, Langer, Vygotsky, Piaget et al)	•ecological paradigm (Capra et al) •sustainable solutions (Capra et al) •deep ecology movement (Naess et al) •evolution of higher selves (Redfield, Marx Hubbard, Masuda, Maharishi et al)

Finally, at the heart of DMLM is Ellen Langer's theory of mindfulness. An idea well said in Bohm and Peat's ground breaking book *Science, order and creativity* illuminates Langer's contribution.

" Clearly what is called for is a kind of free play within the individual and society so that the mind does not become rigidly committed to a limited set of assumptions, or caught up in confusion and false play. Out of this free play could emerge the true creative potential of a society."

With Bohm and Peat's notion of free play of ideas in mind, there may be five keys to Langer's research into mindfulness as reported in Psy Lit, ERIC and Dissertation Abstracts data bases as well as her landmark book.

Mindfulness means creating new categories.
Mindfulness means seeing more than one perspective.
Mindfulness means welcoming new information.
Mindfulness means reframing contexts.
Mindfulness means holding a process orientation to life.

These keys both sum Ellen Langer's 50 or so studies of mindfulness as a Harvard based social psychologist and suggest a number of implications for developing mindful learners in the elementary school. In the case of this project, mindfulness makes a useful metaphor for multiple intelligences; i.e., <u>mindfulness is multiple intelligences.</u>

The free play of ideas follows.

Working Bibliography

The bibliography that follows represents sources for ideas in DMLM including all of the works about Gardner's multiple intelligences cited in four data bases (ERIC, Psy Abstracts, Dissertation Abstracts, and First Search) when multiple intelligences and Gardner are search terms, ≥1982.

Anglin, J. (1993) Reflections on " The unchooled mind ": An interview with Howard Gardner. *Midwestern Educational Researcher* 6 (Winter) 18-20.

Armstrong, T. (1994a) Multiple intelligences in the classroom. Alexandria,VA: Association for Supervision and Curriculum Development. ED 374104.

_____. (1994b) Multiple intelligences: Seven ways to approach curriculum. *Educational Leadership* 52 (Novemeber) 26-28.

Bettine, C. (1994) The theory of multiple intelligences applied to teaching classroom music. Thesis (M.A.) Mount Mary College.

Black, S. (1995) Just do it. *Executive Educator* 17 (April) 33-36.

_____. (1994) Different kinds of smart (H. Gardner's theory of multiple intelligences) *Executive Educator* 16 (January) 24-27.

Blythe, T. and H. Gardner. (1990) A school for all intelligences. *Educational Leadership* 47 (April) 33-37.

Bolanos, P. (1994) From theory to practice: Indianapolis' Key School applies Howard Gardner's theory to the classroom. *School Adminsitrator* 51 (January) 30-31.

Bohm, D. and D. Peat. (1987) *Science, order, and creativity.* New York: Bantam Books.

Bruner, J. (1960) *The process of education.* Cambridge: Harvard University Press.

_____. (1966) *Toward a theory of instruction.* Cambridge: Harvard University Press.

_____. (1990) *The acts of meaning.* Cambridge: Harvard University Press.

_____. (1996) *The culture of educaion.* Cambridge: Harvard University Press.

Campbell, M. and V. Burton. (1994) Learning in their own style (nontraditional approach to science based on H. Gardner's theory of multiple intelligences). *Science and Children* 31 (April) 22-24+.

Capra, F. & D. Steindl-Rast. (1991) *Belonging to the universe: Explorations on the frontiers of science and spirituality.* New York: Harper-Sanfransico.

_____. (1982)*The turning point: Science, society, and the rising culture.* New York: Bantam Books.

Chapman, C. (1993) If the shoe fits...How to develop multiple intelligences in the classroom. ED 377959.

Cochran-Smith, M. and S. Lytle (1993) *Inside outside: Teacher research and knowledge.* New York: Teachers College, Columbia University.

DeFalco, A. (1995) The learning process, apprenticeships, and Howard Gardner. *Journal of Cooperative Education* 30 (Winter) 56-67.

Dickenson, D. (1992) Multiple technologies for multiple intelligences. *The American School Board Journal* 178 (September) AB-12.

Doss, R. (1992) The relationship between low achievement and bodily-kinesthetic intelligence in fourth and fifth graders. University of North Texas. dissertation.

Draft content standards, benchmarks, and performance examples. (1996) Philadelphia: School District of Philadelphia, Office of Standards, Equity & Student Services.

Eisner, E. (1994) Putting multiple intelligences in context: Some questions and observations. *Teacher's College Record* 95 (Summer) 555-560.

Ellison, L. (1992) Using multiple intelligences to set goals. *Educational Leadership* 50 (October) 19-72.

Fasko, D. (1992) Individucal differences and multiple intelligences. Paper presented at the Annual Meeting of the Mid-South Educational Research Association (21st, Knoxville, TN, November 11-13, 1992). ED 362557.

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Feldhuser, J. (1994) Talent development as an alternative to gifted education. *Journal of secondary gifted education* 5 (Winter) 5-9.

Firlik, R. (1994) Reggio, E. Italy preschools: The synergics of theory and practice. ED 382313.

Fluellen, J. (1996) Footsteps (A story of one child's construction of logical mathematical intelligence) Philadelphia Writing Project, University of Pennsylvania. (in press ERIC)

Foerster, E. (1994) Restructuring elementary curriculum in the public school to include Howard Gardner's theory of multiple intelligences. Thesis (Honors in Elementary Education, Millersville University of Pennsylvania).

Fogarty, R. and J. Bellanca. (1995) *Integrating curricula with multiple intelligences: Teams, themes, and threads.* Palatine, Illinois: IRI/Skylight Publishing Inc.

_____(1995) *Multiple intelligences: A collection.* Palatine, Illinois: IRI/Skylight Publishing Inc.

Gardner, Howard. (1983) *Frames of mind: The Theory of multiple intelligences..* United States of America: Basic Books.

_____ and T. Hatch. (1989) Multiple intelligences go to school: Educational implications of the theory of multiple intelligences. *Educational Researcher* 18 (Novemeber) 4-9.

_____ . 1987) The theory of multiple intelligences. Annals of Dyslexia 37 19-35.

_____ and T. Hatch. (1990) Multiple intelligences go to school: Educational implications of the theory of multiple intelligences. Technical Report No. 4. Center for Technology in Education. ED 324 366.

_____. (1993a) *Creating minds.* New York: Basic Books.

_____. (1993b) *Multiple intelligences: Theory in practice.* United States of America: Basic Books.

_____ . (1994a) Intelligences in theory and practice: A response to Elliot W. Eisner, Robert Sternberg, and Henry M. Levin. *Teachers College Record* 95 (Summer) 571-583.

_____ (1994b) Seven myths about multiple intelligences. Keynote address at the Sixth International Conference on Thinking, Massachusetts Institute of Technology (July 17-22, 1994).

_____ and Boix-Mansilla. (1994c) Teaching for understanding--within and across disciplines. *Educational Leadership* 51 (February) 14-18.

Green, A. (1992) Giftedness in the regular classroom. ED 371541.

Grow, G. (1995) Writing and the seven intelligences. ED 379662.

Hatch, T. (1990) From research to reform: Finding better ways to put theory into practice (H. Gardner's theory of multiple intelligences) *Educational Horizons* 71 (Summer) 197-202.

Hebert, E. (1992) Portfolios invite reflection--from students and staff. *Educational Leadership* 49 (May) 58-61.

Hodgkin, R. (1993) Knowing your minds (latest developments in the theory of multiple intelligences). The Times Higher Education Supplement 1073 (May, 28) 16.

Hoerr, T. (1992) How our school applied multiple intelligences theory. *Educational Leadership* 50 (October) 67-68.

How we think and learn. (1991) Capitol Children's Museum, Washington D.C.: National Learning Center. ED 348138.

Jacobson, R. (1992) Research on different ways of being smart leads to 6-year project on teaching and learning " Practical intelligence " in schools. *Chronicle of Higher Education* 39 (October 21) 9, 15.

Kanter, A. (1994) Arts in our school: Arts-based school reform that applies the concepts of interdisciplinary study and active learning to teach to the multiple intelligences. masters thesis.

Kirschenbaum, R. (1990) An interview with Howard Gardner. *Gifted Child Today* 13 (November-December) 26-32.

Kornhaber, M., M. Krechevsky, and H. Gardner. (1990) Engaging intelligence. *Educational Psychologist* 25 (Summer-Fall) 177-199.

_____ and H. Gardner. (1993) Varieties of excellence: Identifying and assessing children's talents.

A series on authentic assessment and accountability. New York: Teachers College. National Center for restructuring education, schools, and teaching. ED 36396.

Krechevsky, M. and H. Gardner. (1990) Approaching school intelligently: An infusion approach. Contibutions to Human Development 21 79-94.

_____ (1994) Project Spectrum: Multiple intelligence theory in early childhood classrooms. Presentation at the sixth international conference on thinking, Massachusetts Institute of Technology (July 17-22, 1994).

Langer, E. (1989) *Mindfulness.* Reading, Massachusetts: Addison-Wesley Publishing Company.

_____(1994, July 17-22) Langer, E. The mindful education. Keynote address at the sixth international conference on thinking, Massachusetts Institute of Technology.

_____(1993) A mindful education. *Educational psychologist* 28 (Winter) 43-50.

_____ (1992 a) Interpersonal mindlessness and language. *Communication monographs* 59 (September 1992) 324-327.

_____(1992 b) Matters of mind: Mindfulness/mindlessness in perspective. *Consciousness and cognition an international journal* 1 (4) 289-305.

_____(1992 c) Mindful learning: A world without losers. *New directions for adult and continuing education* 53 (Spring) 11-20.

_____ (1989) Conditional teaching and mindful learning: The role of uncertainty in education. *Creativity research journal* 2 (3) 139-150.

Lazear, D. (1991a) *Seven ways of knowing* (Teaching for multiple intelligences). Palatine, Illinois: Skylight Publishing.

_____. (1991b) *Seven ways of teaching: The artistry of teaching with multiple intelligences.* Palatine, Illinois: Skylight Publishing.

_____(1994 December, 4-5) Proceedings of a Phi Delta Kappa Seminar on Multiple Intelligences. Wydnham Hotel, Philadelphia, Pennsylvania.

Levin, H. (1994) Commentary: Multiple intelligences theory and everyday practices. *Teachers College Record* 95 (Summer) 570-75.

Machado, A. (1987) Wanderer. (as translated by Francisco Varela) In Laying down a path in walking. *Gaia: A way of knowing (political implications of the new biology).* San Francisco: Lindisfarne Press.

Martin, W. (1995) Assessing Multiple intelligences. Paper presented at the International Conference on EducationalAssessment. 7th Ponce, P.R. March 16. ED 385368.

Makins, V. (1995) Machines of the brain (applying H. Gardner's theory of multiple intelligences to education). The Times Educational Supplement 11o410 (march 17, 1995) 24.

McCahill, P. (1994) Beyond traditional boundaries: Coping with multiple intelligences in today's classrooms. Recreating the revolution. Proceedings of the National Educational Computing Conference (June) Boston, MA. National Educational Computing Conference.

McCall, J. The provident principal. ED 278150.

Mitchell, J. (1995) The theory of multiple intelligences as a theoretical foundation for art appreciation. University of Georgia. dissertation.

Morgan, H. (1992) An analysis of Gardner's theory of multiple intelligences. Paper presented at the Annual Meeting of the Eastern Educational Research Association. ED 360088.

Naess, A. (1989) *Ecology, community and lifestyle .* Great Britain: Cambridge University Press.

O" Connor, A. and S. Callahan. (1994) Seven windows to a child's world: 100 ideas for the multiple intelligences classroom. Palatine, Illinois: Skylight Publishing. ED 381291.

Owens, H. and P. Leitz. (1995) From theory to practice: Using multiple intelligences to teach all learners 24-25 Empowering children with special needs: practices around the world. International Association of Special Education.

Paul, R. (1993) *Everything you wanted to know about critical thinking.* Rohert Park, CA: Center for Moral Critique and Critical Thinking.

Pearce, J. (1971) *Crack in the cosmic egg.* New York: Julian Press.

Perkins, D. (1986) *Knowledge as design.* Hillsdale, New Jersey: Lawrence Erlbaum Associates, Publishers.

_____. The new IQ: The emerging science of learnable intelligence. Keynote address at the sixth international conference on thinking, Massachusetts Institute of Technology (July 17-22, 1994).

_____. (1992) *Smart Schools: From Training Memories to Educating Minds.* New York: The Free Press.

_____. Teaching for Understanding. *American Educator* (Fall 1993) 8; 28-35.

Protor, N. (1985) Educational psychology and curriculum design: a child centereded approach. *Educational Studies* 11 151-158.

Quigley,K. (1994) Multiple intelligences in the schools. ED 378523.

Redfield, J. (1993) *The celestine prophecy.* New York: Warner Books.

_____. (1996) *The tenth insight.* New York: Warner Books.

Rega, B. (1993) Fostering creativity in advertising students: incorporating the theories of multiple intelligences and integrative learning. Paper presented at the Annual meeting of the Association for Education in Journalism and Mass Communication (76th, Kansas City, MO, August 11-14. ED 363396.

Rothenberg, D. (1989) Ecosophy T: from intuition to system. *ecology, community and lifestyle .* Great Britain: Cambridge University Press.

Samples, B. (1992) Using learning modalities to celebrate intelligence. *Educational leadership* 50 (October) 62-66.

Schwartz, P. (1993) Creativity and dance: Implications for pedagogy and policy. *Arts Education Policy Review* 95 (September-October) 8-16.

Sessions, G. (Ed.) (1995) *Deep ecology for the twenty-first century.* Boston: Shambhala.

Shearer, C. and J. A. Jones. (1994) The validation of the Hillside Assessment of Perceived Intelligences (HAPI): A measure of Howard Gardner's theory of multiple intelligences. Paper presented at the Annual meeting of the American Research Association (New Orleans, LA April 4-8. ED 372077.

Shope, R. Mime as a mode of intelligence. ED 311501.

Siegel, J. and M Shanghnessy. ((1994) Educating for understanding. *Phi Delta Kappan* 75 (March) 563-566.

Smagorinsky, P. (1995) Constructing meaning in the disciplines: Reconceptualizing writing across the curriculum. *American Journal of Education* 103 (February) 160-184.

———. (1991) Expressions: Multiple intelligences in the English class. Theory and Research into Pratice. Urbana, Ill.: National Council of Teachers of English.

Smerechansky-Metzger, J. (1995) The quest for multiple intelligences. *Gifted Child Today Magazine* 18 (May/June) 12-15.

Steffe, L. and Gale, J. (1995) *Constructivism in education.* Hillsdale, New Jersey: Lawrence Erlbaum Associates, Publishers.

Steinberger, E. (1994) Howard Gardner on learning for understanding. *School Administrator* 51 (January) 26-29.

Sternberg, R. (1994) Commentary: Reforming school reform: Comments on multiple intelligences theory in practice. *Teachers College Record* 95 (Summer) 561-569.

Taylor, D. Declaration of Principles. Presentation at University of Pennsylvania 7 December 1995 (Literacy Network, Susan Lytle, Graduate School of Education)

TECHNOS interview: Howard Gardner. (1995) TECHNOS 4 (Summer) 4-7.

Trotter, A. (1993) Planning for multimedia. *Executive Educator* 15 (January) 18-21.

Vialle, W. (1994) Profiles of intelligence. *Australian Journal of Early Childhood* 19 (December) 30-34.

Wertsch, J. (1991)*Voices of the mind.* Cambridge, Massachusetts: Harvard University Press.

Yekovich, F. (1994) Current issues in research on intelligence. ERIC Clearninghouse on assessment and evaluation. The Catholic University of America Department of Education, O' Boyle Hall Washington D.C. 20064. ED 385605.